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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,998	12/09/2005	Hideya Kumomi	03500.018184	4588
5514	7590	11/07/2006	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			CHAET, MARISSA W	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/559,998

Applicant(s)

KUMOMI, HIDEYA

Examiner

Marissa W. Chaet

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/9/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/9/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities. On page 14, the words "precursory film" are written twice.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 10-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumomi et al. (PG Pub US 2003/0003766). Kumomi teaches the process for producing crystallized film having crystallized grain which comprises of melting and re-solidifying. See Kumomi.

3. Regarding claim 1, Kumomi teaches a process for producing a crystallized film, comprising the steps of: (1) preparing a film having a crystal grain at a prescribed location; (2) melting a part of a region surrounding the crystal grain of the film and a part of a boundary between the crystal grain and the surrounding film locally by pulse heating; and (3) re-solidifying the melted region. See para. 13.

4. Regarding claim 2, Kumomi teaches the process for producing a crystallized film, wherein the film is in contact with a surface of a substrate, and the crystal structure of the surface of the substrate in contact with the region of melting and re-solidification of

the film and the crystal structure of the formed crystallized film are not continuous. See Fig. 1D, 1E, 1G.

5. Regarding claim 3, Kumomi teaches the process for producing a crystallized film, wherein the step of re-solidification allows a crystal to grow from the crystal grain at the prescribed location in a lateral direction. See para. 60.

6. Regarding claim 4, Kumomi teaches the process for producing a crystallized film, wherein the surrounding region outside the location-controlled crystal grain is completely melted. See para. 58.

7. Regarding claim 10, Kumomi teaches the process for producing a crystallized film, wherein the step of providing a film having a crystal grain placed at a prescribed location comprise a step of providing a single crystal grain in a specified region of a precursor of the film. See para. 17, 18.

8. Regarding claim 11, Kumomi teaches the process for producing a crystallized film, wherein the precursor of the film is an amorphous film, and the step of providing a single crystal grain at a prescribed location is a step of growing a crystal grain by solid-phase crystallization of the amorphous film. See para. 21.

9. Regarding claim 12, Kumomi teaches the process for producing a crystallized, wherein the step of providing a single crystal grain at a prescribed location is a step of growing a crystal grain by melting-resolidification of the precursor of the film. See para. 21.

10. Regarding claim 13, Kumomi teaches the process for producing a crystallized film, wherein the step of growing the crystal grain by melting-resolidification of the

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precursor of the film and melting and resolidifying steps in a process for producing a crystallized film comprising the steps of preparing a film having a crystal grain at a prescribed location, melting a part of a region surrounding the crystal grain of the film and a part of a boundary between the crystal grain and the surrounding film locally by pulse heating and re-solidifying the melted region, are conducted continuously by means of one and the same heating means. See para. 13.

11. Regarding claim 14, Kumomi teaches the process for producing a crystallized film, wherein a spatial location of the crystal grain having a continuous crystal structure in the crystallized film is decided by fixing a spatial location of the specified region. See para. 25.

12. Regarding claim 15, Kumomi teaches a crystallized film, comprising a crystal grain placed at a prescribed location, and another crystal grain grown laterally from the grain at a prescribed location. See para. 60.

13. Regarding claim 16, Kumomi teaches an element, comprising a crystallized film and arranging an elementary element in correspondence with the location of the crystal grain. See para. 25.

14. Regarding claim 17, Kumomi teaches the element wherein the crystal grains are utilized respectively as an active region of an active element. See para. 25.

15. Regarding claim 18, Kumomi teaches the element wherein the active region of the element is formed inside the single crystal grain of the crystallized film. See para. 25.

16. Regarding claim 19, Kumomi teaches a circuit, comprising an element and wiring connected to the element. See para. 26.

17. Regarding claim 20, Kumomi teaches a device, comprising a circuit and a semiconductor device or a display device connected to the circuit. See para. 26.

18. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Park (US 6,326,286). Park teaches the melting of the film using pulse-heating after the re-solidification stage. See Park. Park further teaches the repetition of the melting-solidification process, such that the region of the repeated process overlaps with the region of the previous process, the grain boundary of the crystal grain is continuous, and the repeated process covers regions that have not already been treated with the melting-solidification process. Id.

19. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nickel (DE 196551003A, Derwent Abstract). Nickel teaches a process for producing a crystallized film, which includes melting a part of the region surrounding the crystal with a single laser pulse. Nickel further teaches crystal growth in a lateral direction.

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumomi (PG Pub US 2003/0003766) in view of Park (US 6,326,286). Kumomi discloses the structural limitations for the process and product as discussed above.

21. Regarding claim 5, Kumomi does not disclose the process for producing a crystallized film, wherein the process comprises, after re-solidification, further melting by pulse-heating a portion of the region surrounding the crystal grain. However, Park teaches the process of melting the surrounding region by pulse-heating after re-solidification. See col. 5, lines 7-11. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Kumomi to include the process of melting the surrounding region by pulse-heating after re-solidification, as suggested by Park, to induce complete melting and crystallization.

22. Regarding claim 6, Kumomi does not disclose the process for producing a crystallized film, wherein the repeated step of the melting and re-solidification is conducted plural times. However, Park teaches the repeated process of melting and solidification. See col. 7, lines 51-55. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Kumomi to include the repeated step of the melting and re-solidification is conducted plural times, as suggested by Park, to promote the production of crystallized grains of a desired length.

23. Regarding claim 7, Kumomi does not disclose the process for producing a crystallized film, wherein the region of the melting and re-solidification in the repeated step of the melting and re-solidification is overlapped partly with the region of the

melting and re-solidification of the preceding step of the melting and re-solidification.

However, Park teaches a second melting and re-solidification of film that overlaps the first melting and re-solidification. See Fig. 7B. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Kumomi to include the overlapping of melting and re-solidification processes, as suggested by Park, to enhance the production of crystallized grains.

24. Regarding claim 8, Kumomi does not disclose the process for producing a crystallized film, wherein the melting-solidification region in the repeated melting-solidification step includes the grain boundary of crystal grain having a crystal structure continuous to the location-controlled crystal grain. However, Park teaches the uniform location of grain boundaries that proceeds perpendicularly to the melt surface. See Fig. 7B; col. 7, lines 4-14. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Kumomi to include grain boundaries that are continuous to the crystal grain, as suggested by Park, to control the uniformity and location of the grain boundaries.

25. Regarding claim 9, Kumomi does not disclose the process for producing a crystallized film, wherein the melting-solidification region in the repeated melting-solidification steps covers a region having not been employed yet as the melting-solidification region. However, Park teaches the melting-solidification steps covering regions that have not been employed as melting-solidification regions. See Fig. 7B. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Kumomi to include repeating melting-solidification

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covering unemployed region, as suggested by Park, to enhance the production of crystallized grains.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa W. Chaet whose telephone number is 571-272-8094. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MWC
November 3, 2006



ROBERT KUNEMUND
PRIMARY EXAMINER